FAQ for Implementing Arizona's Science Standard

Q: Which science standard should I be using?
A: The current science standard in Arizona was adopted by the State Board of Education in 2004 and can be found on the ADE website on the Science Standard Page. The standards are specific for each grade, grades K-8. For high school, Strands 1-3 should be incorporated in each course, and appropriate concepts and performance objectives from Strands 4, 5, and/or 6 should be selected based on course content.

Q: When will Arizona adopt new science standards?
A: We currently do not have a firm timeline for when Arizona's State Board of Education will consider revising the current Science Standard and adopting new science standards. During the 2016-17 school year, Arizona's current Science Standard will still be in effect.

Q: Are there any changes to Science AIMS?
A: There are no changes. Science AIMS will continue to be administered for grades 4, 8, and high school biology until new standards are implemented and a new test is designed to align to new standards.

Q: I heard information about the ELA standards changing. Am I still supposed to include the literacy standards as part of my science instruction?
A: Yes. Until new standards are adopted and implemented, schools continue to align their curriculum and instruction to the last standard that was adopted by the State Board of Education. If you are a K-5 teacher, you will continue to integrate the ELA stands of RI (reading informational text), W (writing), and SL (speaking and listening) into your science instruction. If you teach middle or high school science, you will continue to integrate the reading and writing literacy stands of RST and WHST into your science instruction.

- Literacy in Science and Technical Subjects: Grades 6-8 PDF
- Literacy in Science and Technical Subjects: Grades 9-10 PDF
- Literacy in Science and Technical Subjects: Grades 11-12 PDF

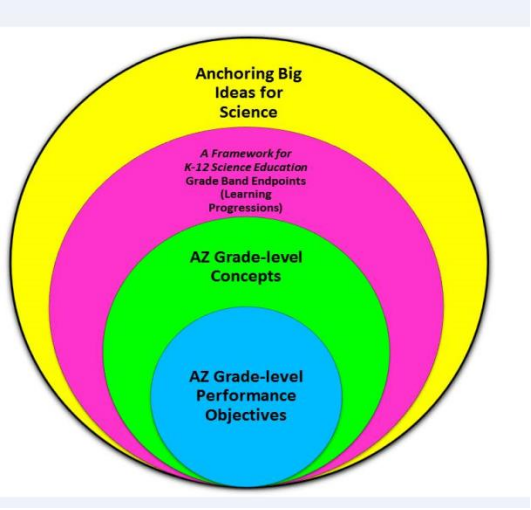
Q: Are there any shifts in science instruction that I should be aware of or plan for?
A: Nationwide, there have been several shifts in science instruction, based on the research in *A Framework for K-12 Science Education*.

- Develop curriculum that supports 3-Dimensional Science instruction.
- Connect state science standards to big ideas in science and learning progressions.
- Use scientific phenomena to engage students and help them build conceptual understanding.

Q: What do you mean by 3-Dimensional Science Instruction?
A: The *Framework* provides information about three important dimensions of science instruction: Science and Engineering Practices, Crosscutting Concepts, and Disciplinary Core Ideas. Within a lesson or series of lessons, students should engage with each of three dimensions to deepen their understanding of science content and how scientific information is acquired. The ADE Science Resource Page provides examples of three-Dimensional Science Lessons.

- Kindergarten Example: Life Cycles (Heredity)
- Grade 3 Example: Light
- Grade 4 Example: Earth's Processes
- Grade 8 Example: Chemical Reactions
- HS Chemistry Example: Rate of Reactions
- HS Biology Example: Adaptations
- HS PS Example: Energy of Pendulums
- HS ES Example: Climate Patterns

Q: How do these shifts fit with Arizona's Science Standard?
A: Arizona's Science Standard was designed to build understanding of specific concepts at each grade level. The performance objectives were designed as measurable stepping stones and achievement points to reach as students developed understanding of each grade-level concept; they were not intended to be taught in isolation, nor are they required to be taught sequentially. Strands 1-3 were specifically designed to be taught in conjunction with Strands 4-6.



Science instruction should focus on how the performance objectives connect to develop understanding of the bigger concept, and build to a big idea in science, rather than focusing on the content or skill contained within an individual performance objective. The ADE has created two documents – Learning Progressions for K-5 Science and Learning Progressions for 6-12 Science – that map the links between learning progressions (based on grade band endpoints in *A Framework for K-12 Science Education*), concepts from Arizona's Science Standard, and 14 big ideas in science. The goal of these documents is to provide additional clarity on how to "connect the dots" when teaching Arizona's Science Standard. When thinking about the performance objectives you teach at your grade level, framing them with the grade band endpoints and learning progressions of the *Framework* helps connect the small discrete pieces of information into a bigger picture of science understanding.

Q: What else should I consider when planning instruction that addresses these shifts?
A: As you consider how you will shift your curriculum or instruction, think in terms of how to make richer connections for your students.

- What important scientific phenomena (connected to your grade level standards) do you want your students to understand?
- How can you connect content objectives (within and between Strands 4, 5, and 6) so they build deeper conceptual understanding of the phenomena and underlying scientific principles for your students?
- How do the selected content objectives (disciplinary core ideas) connect to the learning progressions in the *Framework*, and build understanding of the target phenomenon?
- How can you teach the current objectives in Strand 1 (inquiry processes) and expand them to the complexity of the eight science and engineering practices in the *Framework*?
- How can you connect these eight practices to the content objectives (in Strands 4, 5, and 6) in our current standard?
- How can you use these practices to connect to the application objectives (in Strands 2 and 3) and the crosscutting concepts outlined in the *Framework*?
- How does the intersection of the core ideas, science and engineering practices, and crosscutting concepts help build students' understanding of the target phenomenon?
- How can you embed reading, writing, and speaking/listening to develop a deeper content understanding and support the practices of constructing explanations, developing and using models, engaging in arguments from evidence, and obtaining, evaluating and communicating information in science?